

REMARKS

Reconsideration of the present application is respectfully requested. In this amendment, claim 36 has been canceled, claims 25, 26 and 29-35 have been amended, and claims 41-48 are newly added. No new matter has been added. Claims 1-24 and 37-39 were previously canceled.

Therefore, claims 25-35 and 40-48 are now pending

Claim Objections

Claims 25, 26, 29, 30, 32, 35 and 36 were objected to due to an alleged informality (missing "semi column" [*sic*]). Claims 25, 26, 29, 30, 32 and 35 have been amended to include a *colon* (":") where appropriate. Claim 36 has been canceled. The objection is, therefore, believed to be overcome.

Prior Art Rejections

Claims all claims were rejected under 35 U.S.C. § 102(e) based on U.S. Patent no. 6,473,775 of Kusters et al. ("Kusters"). Applicants respectfully traverse the rejections. The amendments to the claims are made only to place the claims in what Applicants consider to be better form. The amendments are not made in response to the rejections or to comply with any statutory requirement of patentability, since no such amendments are believed to be necessary (as will be apparent from the discussion below).

Independent claims 25, 35 and 43

Claim 25 recites(as amended):

25. (Currently Amended) A method comprising:
maintaining an active map of information indicating in-use and free blocks associated with a file system;
maintaining a set of snapshots, each snapshot representing a state of said file system at a particular point in time; and
computing a summary map as a logical union of active maps included in at least two of said snapshots. (Emphasis added.)

Kusters does not disclose or suggest such a method. In particular, Kusters does not disclose or even remotely hint at *computing a summary map as a logical union of active maps included in at least two of said snapshots*. Note that while Applicants have amended the language of this claim limitation slightly, the amendment was *not* in response to or necessitated by the rejection. For example, Applicants find no disclosure or suggestion in Kusters of any form of *logical union between active maps of snapshots*.

As defined in Kusters, a “snapshot” is a logical combination of data stored on a base volume and difference data stored in a differential file (col. 6, lines 30-32). Kusters is directed to a technique which allegedly allows the differential file to be stored in the base volume to which the snapshot relates. Kusters further is directed to a technique which allegedly allows the differential file to grow when it becomes full.

The Examiner contends (Office Action, p. 3) that Kusters discloses (per claim 25) a summary map, as a logical union of active maps included in at least two of said snapshots, at Figs. 2, 3, 4 and col. 5, lines 7-59, col. 6, lines 5-65, col. 7, line 6 to col. 8, line 47. However, Applicants do not find even a hint of this claim limitation there or

anywhere else in Kusters. As to col. 6, line 31, the Examiner points out that that text mentions a “logical combination”, which the Examiner apparently reads on the “logical union” recited in claim 25. However, that text in Kusters simply refers to how a “snapshot” itself is defined; it has nothing to do with anything that could be considered a summary map or an active map as recited in Applicants’ claims.

Regarding this claim limitation, the Examiner has cited very large sections of Kusters, including three separate figures and nearly four columns of text. If the Examiner believes this claim limitation is in fact disclosed in Kusters, then the Examiner should be able to provide a much more *precise* cite, indicating *exactly* where in Kusters this claim limitation is allegedly disclosed, and Applicants request that the Examiner do so. The failure to provide such a specific cite can only confirm the correctness of Applicants’ position.

Nowhere does Kusters disclose or suggest a *summary map* which is computed as a *logical union of active maps included in at least two of said snapshots*. For at least this reason, therefore, claim 25 and all claims which depend on it are patentable over the cited art.

A similar limitation is also present in independent claims 35 and 43. Therefore, claims 35 and 43 are also patentable over the cited art

Independent claim 32

32. (Currently Amended) A method comprising:
maintaining an active map of information indicating in-use and free
blocks associated with a file system;

maintaining a set of snapshots, each snapshot representing a state of said file system at a particular point in time;
maintaining a summary map based on an active map included in at least one of said snapshots;
receiving a request to delete a particular snapshot; and
deleting said particular snapshot, **wherein said deleting involves, for a block used by said particular snapshot, indicating said block is free in said summary map depending on a snapshot just prior to said particular snapshot and a snapshot just after said particular snapshot.** (Emphasis added.)

Kusters does not disclose or suggest such a method. In particular, Kusters does not disclose or even remotely hint at deleting a particular snapshot, wherein said deleting involves, for a block used by said particular snapshot, *indicating said block is free in said summary map depending on a snapshot just prior to said particular snapshot and a snapshot just after said particular snapshot.* Note that while Applicants have amended the language of this claim limitation slightly, the amendment was *not* in response to or necessitated by the rejection. For example, Applicants find no disclosure or suggestion in Kusters that, in relation to deleting a snapshot, a summary map may be affected in any way depending on, or “in response to” as previously recited, a snapshot *other than the snapshot to be deleted*, much less depending on *two* other snapshots.

The Examiner contends (Office Action, p. 5) that Kusters discloses this functionality at col. 9, lines 21-24 (Fig. 6, step 608) and col. 9, line 13 to col. 10, line 47. However, that contention is believed to be incorrect. Applicants do not find even a hint of this claim limitation there or anywhere else in Kusters.

Col. 9, lines 1-24, for example, relate to a listing of allocation units (an example of which is given as the snapshot bitmap 270 in col. 9, lines 2-5) which indicates the old

data which should be copied prior to being overwritten (per the system's copy on write policy). Lines 21-24 of column 9 state that this listing (e.g., bitmap 270) is updated, after data is copied to the differential file, by clearing the entry associated with the data just copied, so that future writes to the allocation unit copied will not be copied to the same differential file. Nothing in that section, however, even relates to *deleting a snapshot*, much less suggesting that the deletion involves, for a block used by said particular snapshot, indicating said block is free in said summary map depending on a snapshot just prior to said particular snapshot and a snapshot just after said particular snapshot.

Likewise, the recited functionality is not found in the other cited sections or anywhere else in Kusters. Here again, the Examiner has cited very large sections of Kusters for this one specific claim limitation, in this instance amounting to nearly two columns of text. If the Examiner believes this claim limitation is in fact disclosed in Kusters, then the Examiner should be able to provide a much more *precise* cite, indicating *exactly* where in Kusters this claim limitation is allegedly disclosed, and Applicants request that the Examiner do so. The failure to provide such a specific cite can only confirm the correctness of Applicants' position.

Nowhere does Kusters disclose or suggest deleting a particular snapshot, *wherein said deleting involves, for a block used by said particular snapshot, indicating said block is free in said summary map depending on a snapshot just prior to said particular snapshot and a snapshot just after said particular snapshot*. For at least this reason, therefore, claim 25 and all claims which depend on it are patentable over the cited art.

Dependent Claims

In view of the above remarks, a specific discussion of the dependent claims is considered to be unnecessary. Therefore, Applicants' silence regarding any dependent claim is not to be interpreted as agreement with, or acquiescence to, the rejection of such claim or as waiving any argument regarding that claim.

Conclusion

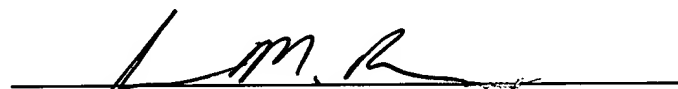
For the foregoing reasons, the present application is believed to be in condition for allowance, and such action is earnestly requested.

If there are any additional charges/credits, please charge/credit our deposit account no. 02-2666.

Respectfully submitted,
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